Owner's Manual for the BV-60H/BV-120H

All Tube Professional Series Guitar Amplifiers

MUSICIAN MADE IN THE U.S.A. by CRATE®

Congratulations!

Your love of performing and driving ambition to be the best have brought you to a turning point in your musical career: the incredible BV-60H or BV-120H Professional Series guitar amplifier. An all-tube powerhouse of an amplifier designed to take you to the top and keep you there.

We know something about you: we know you were never impressed with those "toys" that some of your friends called amplifiers. We know you were holding out until ***someone*** offered you an American-made, affordable piece of professional equipment you could really sink your teeth into. A serious amplifier, designed for a serious musician: an amp with the sounds you've always looked for, the power you've always dreamed about, and the reliability you know you'll need. And all with a name you ***know*** you can trust: CRATE.

Like all Crate products, your BV-60H/120H is made with pride in America, using only the best components. Extensive testing at the hands and ears of skilled technicians and musicians insures you that this amplifier is the absolute best it can be.

In order to get the most out of your new amplifier, we strongly urge you to go over the information contained in this manual before you begin playing.

And thank you for choosing CRATE®

Contents:

Introduction 3
Features 3
The Front Panel 4
The Rear Panel 5
Some Suggested Settings 6
A Word About Tubes 7
System Block Diagram 7
Technical Specifications . . . . . .back cover

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER.
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

ATTENTION
RISQUE D'ELECTROCUTION
NE PAS OUVRIR

ATTENTION: POUR REDUIRE D'ELECTROCUTION NE PAS
ENLEVER LE COUVERCLE. AUCUNE PIECE INTERNE N'EST REPRABLE
PAR L'UTILISATEUR. POUR TOUTE REPARATION, S'ADRESSER A UN
TECHNICIEN QUALIFIE.

VORSICHT
ELEKTRISCHE SCHLAGGEFAHR
NICHT OFFENEN

VORSICHT: ZUR MINIMIERUNG ELEKTRISCHER SCHLAGGEFAHR NICHT
DEN DECKEL ABENHMEN. INTERNE TEILE KONNEN NICHT VOM
BENUTZER GEWARTET WERDEN. DIE WARTUNG IS QUALIFIZIERTEM
WARTUNGSPERSONAL ZU UBERLASSEN.

THIS EQUIPMENT HAS BEEN DESIGNED AND ENGINEERED TO PROVIDE SAFE AND RELIABLE OPERATION. IN ORDER TO PROLONG THE LIFE OF THE UNIT AND PREVENT ACCIDENTAL DAMAGES OR INJURY, PLEASE FOLLOW THESE PRECAUTIONARY GUIDELINES:

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN CHASSIS; DO NOT DEFEAT OR REMOVE THE GROUND PIN OF THE POWER CORD; CONNECT ONLY TO A PROPERLY GROUNDED AC POWER OUTLET.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

CAUTION: NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

CAUTION: THIS UNIT IS CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS. CONTINUED EXPOSURE TO HIGH SOUND PRESSURE LEVELS CAN CAUSE PERMANENT HEARING IMPAIRMENT OR LOSS. USER CAUTION IS ADVISED, AND EAR PROTECTION RECOMMENDED IF UNIT IS OPERATED AT HIGH VOLUME. THE CHART BELOW SHOWS THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS WHICH WERE IN EFFECT AT THE TIME OF THIS PUBLICATION FOR PERMISSIBLE NOISE EXPOSURE, PER 29CFR1910.95, TABLE G-16:

SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS	SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS
90	8	102	1 - 1 1/2
92	6	105	1
95	4	110	1/2
97	3	115	1/4 or less
100	2		

ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS TO THESE AMOUNTS LISTED ABOVE COULD RESULT IN SOME HEARING LOSS.

EXPLANATION OF GRAPHICAL SYMBOLS: = "DANGEROUS VOLTAGE" "DANGER HAUTE TENSION" "GEFAHLICHE SPANNUNG"; = "IT IS NECESSARY FOR THE USER TO REFER TO THE INSTRUCTION MANUAL" "REFERREZ-VOUS AU MANUAL D'UTILISATION" "UNBEDINGT IN DER BEDIENUNGSANLEITUNG NACHSCHLAGEN"

Introduction:

The BV-60H/120H are all-tube, feature-packed professional stage performers' amplifiers. Rugged construction, reliable American craftsmanship and two powerful channels of pure tube power are some of the trademarks of these new and impressive pieces of musician's equipment. Both amplifiers feature two distinctly different 12AX7 tube-driven channels: one with classic tube rhythm sounds and one offering you some of the finest lead and overdrive sounds of any stock amplifier.

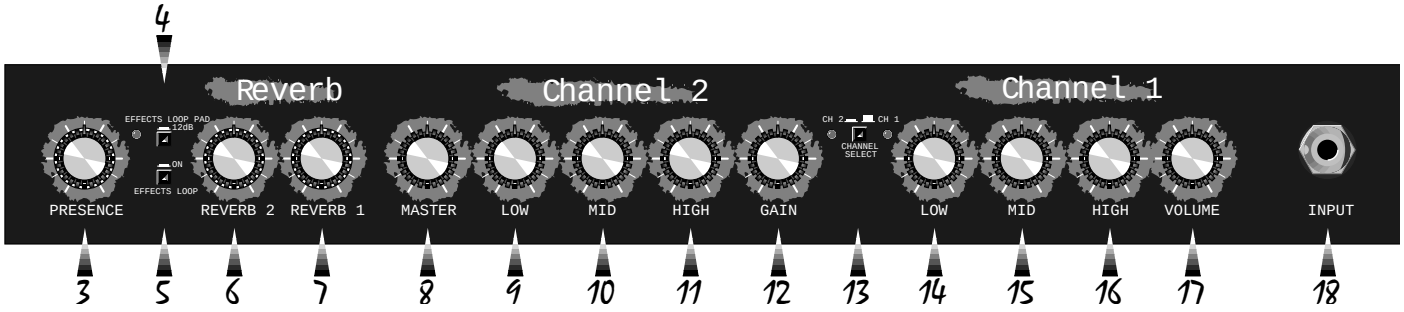
Each channel features an all-tube preamp section with separate reverb level controls and three bands of equalization for total tone control. The master Presence control lets you custom tailor the sound of your guitar to suit your particular needs. The effects loop can be quickly bypassed via the front panel switch or an optional footswitch and features a switchable “pad” for use with either floor pedals or rack-mounted effects.

The Line Out signal is tapped directly from the speaker outputs, then attenuated and frequency-compensated to replicate the sound of a miked speaker cabinet. Dual speaker jacks and an impedance selector switch allow the use of multiple cabinets totalling 8 or 16 ohms. The BV-60H packs a solid 50 watts of output power; the 120H a whopping 100 watts.

Features:

Here's a quick overview of the BV-60H/120H's features and controls. Additional information can be found on the pages indicated.

- **All-Tube Preamp and Power Amp:** Classic tube sounds with Crate’s legendary performance and reliability.
- **Two Completely Separate Channels:** Independent level, tone and reverb controls *(page 4)*.
- **Presence Control:** Provides even greater tone control and flexibility by allowing you to vary the upper harmonics of your guitar *(page 4)*.
- **Footswitch Control:** Remote channel selection and Effects Loop on/off is available through the use of an optional two-button footswitch (such as Crate’s CFP-2) *(page 5)*.
- **Switchable Effects Loop with Pad:** Footswitch or front panel button controlled, the external effects loop can be switched in or out with ease. A switchable pad provides optimum performance from line-level rack mounted effects as well as floor-dwelling foot pedals *(pages 4,5).*
- **Impedance Selector Switch:** Proper impedance matching is essential for optimum performance and life expectancy of a tube amplifier. These amps allow the use of 8 or 16 ohm speaker configurations *(page 5)*.
- **Line Out Jack:** Taken directly from the output of the speaker jacks, the Line Out signal is frequency compensated to sound just like a “miked” speaker cabinet. Use this to connect to the house mixing board, a recording console or another performer’s powered monitor *(page 5)*.
- **DC Filament Supply:** The first preamp tube has a DC filament supply for reduced hum.
- **High Cosmetic Appeal and Stage Presence:** The unique cosmetics of the BV-60H/120H serve as a tribute to your good taste in musical equipment.
- **Musician Made in the U.S.A.**



The Front Panel:

1. POWER (not shown): This switch applies AC voltage to the amplifier, and should always be turned **on *first***. The switch lights up when the AC power is on.

2. STANDBY (not shown): This switch activates the amplifier, and should always be turned **on *last***. The switch lights up when the high voltage power is passing through to the tubes.

> ***NOTE:*** **When you first power up this amplifier, leave the Standby switch OFF for at least 20 seconds. This gives the power tubes a chance to prepare themselves for action.**

3. PRESENCE: Increase the level of upper harmonics with this control. The presence control allows a boost of up to 5dB at 10kHz.

4. EFFECTS LOOP PAD: This switch activates a 12dB pad on the effects send signal and corresponding gain recovery on the return. In the "out" position the signal is full strength which is best suited for line level rack mountable effects. With the switch "in" the signal is lower which is best suited for foot pedal type effects.

5. EFFECTS LOOP SWITCH: This switch controls the effects return signal of the effects loop. The loop is only active when the switch is pressed in. When a footswitch is used, this switch is disabled. The adjacent yellow LED glows when the loop is in use.

6,7. REVERB 2, REVERB 1: Adjust the amount of reverberation on each channel with these controls: at the "0" position the signal is "dry" (no reverb). As you bring the control up, the amount of reverb increases.

Channel 2:

8. MASTER: Set the output signal level of channel 2 with this control. At the "0" position (full left) very little or no signal will be heard; as you bring the control up (towards center) the output level of channel 2 increases. Use this control along with your guitar's volume and the channel 2 gain control (#12) to produce a wide variety of sounds.

9. LOW: Adjust the bottom end response with this control. The low control covers a range of 15dB at 100Hz. This sets the amount of heard (and felt) from the amp.

10. MID: Adjust the midrange response with this control. The mid control covers a range of 13dB at 500Hz. This controls the "voice" of your guitar.

11. HIGH: Adjust the high end response with this control. The high control covers a range of 10dB at 10kHz. This controls the "bite" of your guitar.

12. GAIN: Adjust the overdrive (distortion) level with this control. With the control towards "0" (to the left) the signal is relatively clean. As you bring the control towards "5" (center position) the distortion increases, along with the overall output level. Keep turning the control towards "10" and you'll increase the distortion even more.

13. CHANNEL SELECT: Switch between channels with this push-button switch. The adjacent amber LED glows when channel 1 is selected (switch "out"), the red LED glows when channel 2 is selected (switch "in"). When a footswitch is used for channel switching, this switch is disabled.

Channel 1:

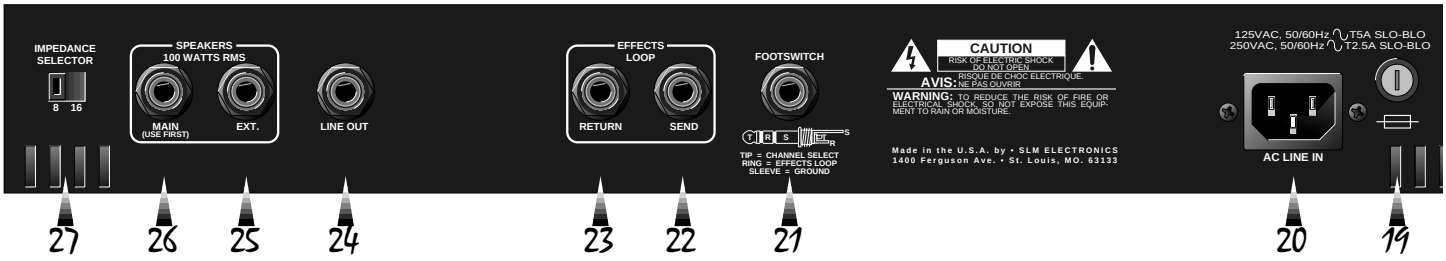
14. LOW: Adjust the bottom end response with this control. The low control covers a range of 16dB at 100Hz. This sets the amount of heard (and felt) from the amp.

15. MID: Adjust the midrange response with this control. The mid control covers a range of 20dB at 300Hz. This controls the "voice" of your guitar.

16. HIGH: Adjust the high end response with this control. The high control covers a range of 10dB at 10kHz. This controls the "bite" of your guitar.

17. VOLUME: Set the output volume level of channel 1 with this control.

18. INPUT: Connect your guitar or wireless receiver into this standard 1/4" jack using a shielded instrument cable.



The Rear Panel:

19. FUSE: This fuse protects the amplifier against damages caused by overload conditions in the unit. If the fuse blows, replace it only with the same size and type as indicated on the rear panel. If the fuse blows continually, the line voltage may be incorrect, or the amp may need servicing.

20. AC LINE IN: Firmly plug the female end of the supplied power cord into this socket, pushing it in until it is fully seated. Plug the male end of the cord into a properly grounded AC outlet of the correct voltage. ***DO NOT DEFEAT THE GROUND PIN OF THE AC PLUG!*** Use only the supplied power cord. If the amplifier is to be used outside of the United States, see your authorized Crate dealer for information about alternate line cords and power converters if needed.

21. FOOTSWITCH JACK: Connect a stereo 1/4" (tip/ring/sleeve) here from a two-button footswitch (such as the Crate CFP-2) for remote control of channel switching and the effects loop. The tip of the jack is for the channel switching; the ring is for the effects loop. When a footswitch is connected here, the front panel channel select and effects loop switches are disabled.

22. EFFECTS LOOP SEND: Connection to an external effects device is made via this jack. Connect a shielded instrument patch cord from the send jack to the input jack of the effect. This jack is always active. The send jack also doubles as a "preamp out" jack, to feed a post-eq, pre-amplified signal to a mixing board, recording console or external amplifier.

23. EFFECTS LOOP RETURN: Connection from an external effects device is made via this jack. Connect a shielded instrument patch cord from the output jack of the effect to the return jack. This jack is active only when the effects loop is switched in. The return jack also doubles as a "power amp in" jack, to feed a line-level signal directly into the BV-60H/120H's internal power amp. This is useful when "slaving" two amplifiers together.

24. LINE OUT JACK: This 1/4" jack supplies a line-level output signal from the power amp for patching into a mixing board, recording console or external amplifier. The signal is tapped directly from the speaker outputs, then attenuated and electronically compensated to simulate the sound of a "miked" cabinet.

25. EXT. SPEAKER JACK: Use this jack to connect the amplifier to a secondary speaker cabinet, ***after*** a speaker has been connected to the main speaker jack (#26).

26. MAIN SPEAKER JACK: Use this jack to connect the amplifier to your primary speaker cabinet. **Always keep the impedance at 8 or 16 ohms,** with the impedance selector switch (#27) at the proper setting.

NOTE: Use the MAIN SPEAKER jack *first*. Then, if an extension speaker is desired, connect it to the EXT. SPEAKER jack.

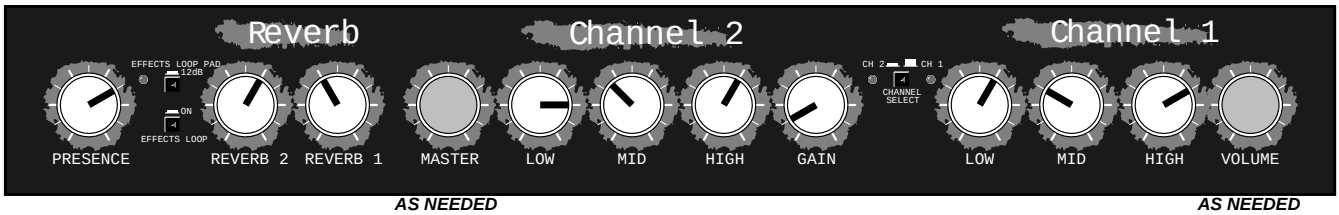
27. IMPEDANCE SELECTOR: For the best performance and least strain on your amplifier, you MUST properly match the impedance of your amplifier to that of your speaker cabinet(s). Set the selector switch to the 8 or 16 ohm position, depending on the **total** impedance of your speaker cabinet(s). The chart below can help you determine that impedance based on the following combinations of speakers connected in parallel.

CAB. IMP.	# OF CABS.	TOTAL IMP.
8 OHMS	1	8 OHMS
16 OHMS	1	16 OHMS
16 OHMS	2	8 OHMS
32 OHMS	2	16 OHMS
32 OHMS	4	8 OHMS

Some Suggested Settings:

CRUNCHY EDGE:

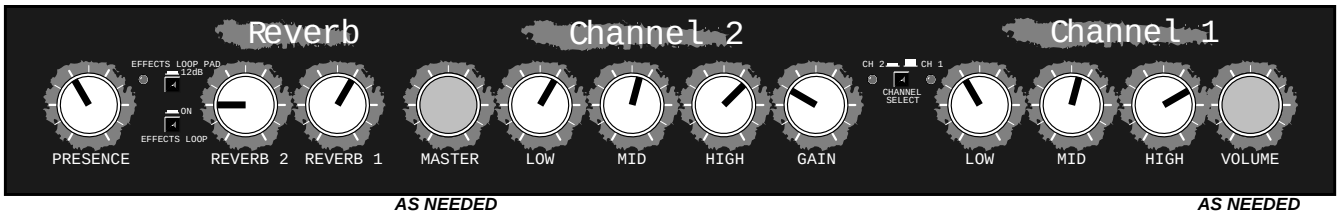
SPARKLING CLEAN:



AS NEEDED *AS NEEDED*

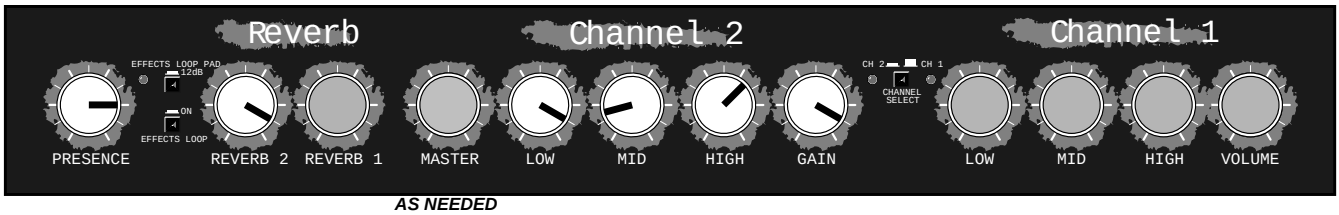
ROCK RHYTHM:

FAT CLEAN:



AS NEEDED *AS NEEDED*

MASSIVE METAL:



AS NEEDED

A Word About Tubes:

Vacuum tubes can only last so long. Allowing your amp to cool down before moving it will help prolong the life of the tubes. Even so, after about a year (or sooner if you're on tour or jammin' more frequently than most) you may notice the output of your amp just isn't as "alive" as it used to be. If the sound from your amplifier starts to grow weak, lacks punch, fades up and down, loses highs and lows, gets "funny" (clanking sounds, etc.), it's very likely that the power tubes are worn out and need replacing. Since power tubes work together in an amplifier, it is important that they all be replaced at the same time with a matched set of tubes.

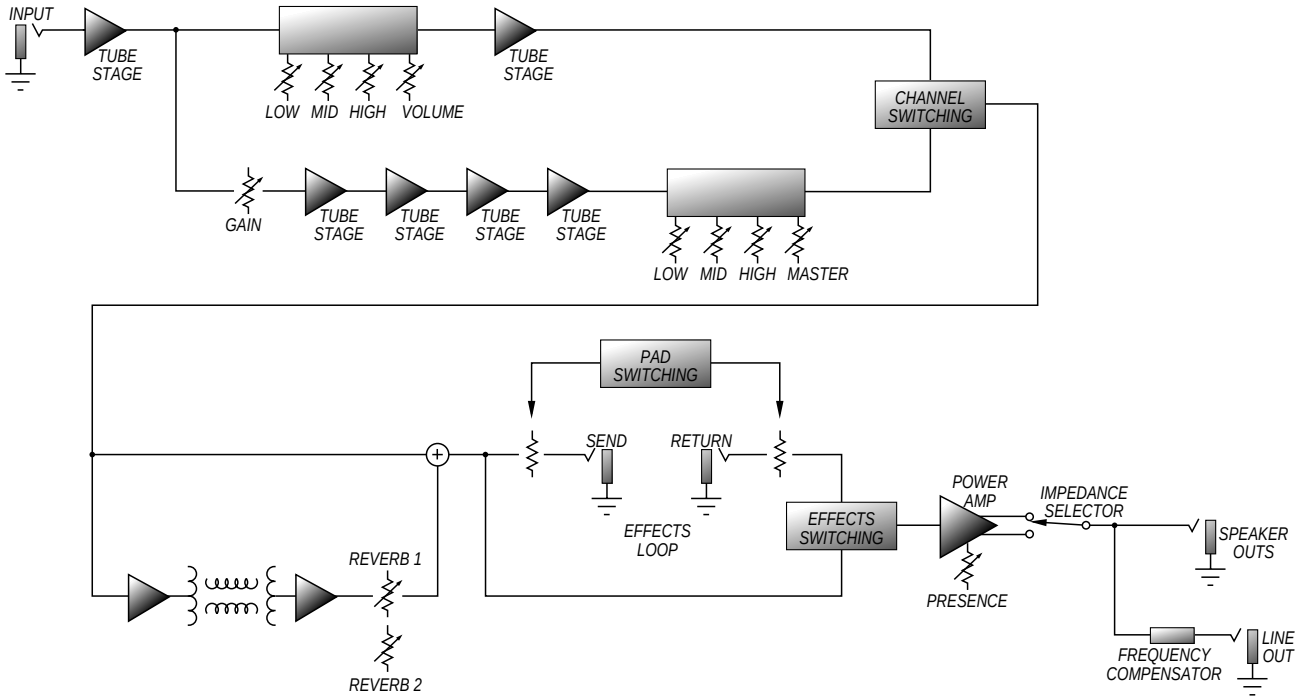
If the amp starts to squeal, gets noisy, loses gain or starts to hum, the preamp tubes may be bad. Insist upon using only the highest quality, low-microphonic tubes!

***NOTE:* Tube replacement should always be done by a qualified service technician, since adjustment of the internal biasing controls will be necessary after the new tubes are installed. Also, removal of the tubes may expose extremely hazardous voltage levels, which could cause injury or death.**

To help prolong the life of your tube amplifier, and to keep it in top performing condition, please observe the following guidelines:

- Always match the impedance of your speaker cabinet(s) to the amplifier's impedance selector switch setting.
- In cold weather, allow the amplifier to warm up to room temperature before turning it on (to prevent cracking the tubes).
- Allow the amplifier a moment to cool down after playing it before you move it.
- Protect the amplifier from exposure to dust and moisture. If liquid gets spilled into the amplifier, or if it gets dropped or excessively jarred, have it checked out at a service center before using it.

System Block Diagram:



Technical Specifications:

Output Power Rating		
	BV-60H	50 watts RMS @ 5% THD 8 or 16 ohm load, 120 VAC
	BV-120H	100 watts RMS @ 5% THD 8 or 16 ohm load, 120 VAC
Gain	**Channel 1**	66dB, tones at “10” @ 1kHz
	Channel 2	101dB, tones @ “10” @ 1kHz
Tone Control Range		
	Channel 1	
	Low	16dB @ 100Hz
	Mid	20dB @ 300Hz
	High	10dB @ 10kHz
	Channel 2	
	Low	15dB @ 100Hz
	Mid	13dB @ 500Hz
	High	10dB @ 10kHz
	Presence	5dB @ 10kHz
Input Impedance		1M ohm
Maximum Signal Accepted		2.8V peak to peak
Tube Types		
	Preamp	12AX7A (3)
	Power Amp	BV-60H: 12AX7A (1), 6L6GT/5881 (2) BV-120H: 12AX7A (1), 6L6GT/5881 (4)
Line Out Level		1.2V RMS nominal
Power Requirements		
	BV-60H	115V 60Hz, 110VA; 2.5A Slo-Blo Fuse
	BV-120H	115V 60Hz, 180VA; 5A Slo-Blo Fuse
Size and Weight		12”H x 30.25”W x 10”D, 50lbs.

Crate continually develops new products, as well as improves existing ones. For this reason, the specifications and information in this manual are subject to change without notice.

The BV-60H and 120H are covered with high-quality, durable Tolex®. To keep them looking their best, avoid abrasive cleansers. Wipe the cabinets clean using a slightly dampened soft cloth. Do not spray cleaners directly into the amplifier. Never use brass cleaners on the hardware since they could damage their protective coatings.

CRATE® MUSICIAN MADE IN THE U.S.A.

recyclable

©1996 SLM ELECTRONICS • A division of St. Louis Music • 1400 Ferguson Avenue • St. Louis, Mo 63133

P/N 47-631-03 • 09/96